

U.S. Patent Application Serial No. 10/691,016
Reply to Office Action dated September 21, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-37. (Cancelled)

38. (Currently Amended) A mechanized method for vineyard cultivation, comprising:

mechanical pruning during a first period in the vineyard's dormant season using a first tool comprising a cutting tool as a mechanized pruner to remove a predetermined percentage of grapevine's canes and/or shoots;

shoot thinning to remove shoots below the grapevine's cordon and spaced apart from and above a base of the grapevine during a second different period in the vineyard's growing season using a second tool comprising a striking tool as a mechanized shoot thinner to remove a predetermined percentage of shoots; and

fruit thinning during a third different period in the vineyard's growing season after shoot thinning using a mechanized fruit thinner to remove a predetermined percentage of fruit, wherein pruning, shoot thinning and fruit thinning are coordinated to achieve a predetermined node density and yield;

harvesting using a mechanized harvester comprising a shaking tool;

wherein the first tool, second tool, and mechanized fruit thinner and mechanized harvester are mounted to a vehicle and configured for mechanized pruning, mechanized shoot thinning, mechanized and fruit thinning, and mechanized harvesting respectively while the vehicle moves through the vineyard.

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39-41. Cancelled

42. (Currently Amended) A method according to claim [[41]] 38, wherein the cutting tool comprises a cutting bar.

43-45. Cancelled

46. (Currently Amended) A method according to claim [[44]] 38, wherein the striking tool comprises a plurality of striker elements.

47. (Currently Amended) A method for vineyard mechanization according to claim 38, further comprising leaf removal coordinated with other mechanized operations, wherein said leaf removal includes using a mechanized device to remove excess leaves in a fruiting zone.

48-50. Cancelled

51. (Previously Presented) A mechanization method according to claim 38, wherein the grapes are trained on single curtain trellis systems, the method further comprising canopy adjustment by removing a portion of the canopy foliage to allow for movement of air and light into a portion of the canopy.

52. (Currently Amended) A mechanization method according to claim 38 for grapes trained on GDC trellis and GDC-like canopy systems, further comprising:

~~pruning during a dormant period using a mechanical pruner;~~

~~shoot thinning with a mechanical pruner;~~

~~fruit thinning after shoot thinning and before fruit is ready for harvest using a mechanical fruit thinner;~~

opening centers of a top portion of the vine with a mechanical slapper unit; and

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keeping centers clean using a mechanical breaker unit;

wherein ~~the mechanical pruner, mechanical shoot thinner, mechanical fruit thinner, the~~ mechanical slapper unit and the mechanical breaker unit are coupled to a vehicle and configured for mechanical operation while the vehicle moves through the vineyard, and wherein the opening centers and keeping centers clean are coordinated with the other mechanized operations to achieve a predetermined node density and yield.

53. Cancelled

54. (Currently Amended) A mechanization method according to claim 52, further comprising shoot positioning using a mechanical shoot positioner to position shoots, wherein the mechanical shoot positioner is coupled to a vehicle and configured for mechanical operation while the vehicle moves through the vineyard, and wherein the shoot positioning is coordinated with the other mechanized operations to achieve a predetermined node density and yield.

55-57. Cancelled

58. (Currently Amended) A mechanization method according to claim 38 for grapes produced on divided canopy trellises, further comprising:

~~summer pruning during a dormant period using a mechanical pruner to cut sides and tops;~~

~~shoot thinning during a growing period using a mechanical shoot thinner;~~

~~fruit thinning after shoot thinning and before fruit is ready for harvest using a mechanical fruit thinner;~~

leaf removal using a mechanized leaf removal machine to remove excessive leaves in a fruiting zone on the outside of the canopy; and

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breaking centers open of a top portion of grape plants between divided portions of the divided canopy trellis using a mechanical slapper or breaker device;

wherein the ~~mechanical pruner, mechanical shoot thinner, mechanical fruit thinner,~~ mechanized leaf removal machine and the mechanical slapper or breaker are coupled to a vehicle and configured for mechanical operation while the vehicle moves through the vineyard, and wherein the mechanized leaf removal and mechanized breaking centers open are coordinated with the other mechanized operations to achieve a predetermined node density and yield.

59-62. Cancelled

63. (Currently Amended) A mechanization method according to claim 38 of grapes trained to a high wire single cordon trellis system, further comprising:

~~shoot thinning using a mechanized shoot thinner;~~

~~fruit thinning after shoot thinning and before fruit is ready for harvest with a mechanized hand-held free fruit thinning device;~~

canopy removal in vigorous, mature vineyards in cool and/or humid regions, by removing the center top with a mechanized slapper unit adapted to remove said top, wherein the mechanized slapper unit is coupled to a vehicle and configured for mechanical operation while the vehicle moves through the vineyard, and wherein the mechanized canopy removal is coordinated with the other mechanized operations to achieve a predetermined node density and yield;

~~minimal pruning using a mechanized pruning unit; and~~

~~harvesting using a mechanized harvester.~~

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64. (Currently Amended) A mechanization method according to claim 38 for grapes produced on a California T-trellis, further comprising:

~~dormant pruning using a mechanized pruner;~~

~~shoot thinning during a growing period using a mechanized shoot thinner;~~

~~fruit thinning after shoot thinning and before fruit is ready for harvest with a mechanized hand held free fruit thinner;~~

early leaf removal to expose fruit to sunlight and acclimate grape skins to sunlight exposure using a mechanized leaf remover machine adapted to remove leaves wherein the mechanized leaf removal machine is coupled to a vehicle and configured for mechanical operation while the vehicle moves through the vineyard, and wherein the mechanized early leaf removal is coordinated with the other mechanized operations to achieve a predetermined node density and yield; and

~~harvesting using a mechanical harvester.~~

65. (Previously Presented) A mechanization method according to claim 38 for grapes produced on vertical moveable catch wires, further comprising:

~~dormant pruning using a mechanical pruner;~~

~~shoot thinning during a growth period using a mechanical shoot thinner;~~

~~fruit thinning after shoot thinning and before fruit is ready for harvest with a mechanical fruit thinner device adapted to remove excess fruit;~~

leaf removal using a machine to remove excessive leaves;

pruning during a growth period with a mechanical pruner unit; and

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~~harvesting using a mechanical harvester;~~

~~wherein the leaf removal machine and the mechanical pruner, mechanical shoot thinner, mechanical fruit thinner, leaf removal machine, mechanical pruner unit and the mechanical harvester are coupled to a vehicle and configured for mechanical operation while the vehicle moves through the vineyard, and wherein the mechanized leaf removal and mechanized pruning during a growth period are coordinated with the other mechanized operations to achieve a predetermined node density and yield.~~

66. (Currently Amended) A mechanization method according to claim 38 for grapes produced on Smart-Dyson Ballerina trellis systems, comprising:

~~dormant pruning using a mechanical pruner adapted to prune on the upper part of the ballerina and a pruning unit adapted to prune on the lower part of the ballerina;~~

~~shoot thinning during a growth period using a first shoot thinner adapted to shoot thin on the upper part of the ballerina, and using a second shoot thinner adapted to shoot thin on the lower part of the ballerina spaced above the ground;~~

~~after shoot thinning and before fruit is ready for harvest, removing any excess fruit from the upper part of the ballerina with a mechanized fruit thinner, any excess fruit on the lower part of the ballerina with a mechanized fruit thinner having different top and bottom settings;~~

~~leaf removal using a leaf removal machine adapted to remove leaves on the upper part of the ballerina trellis and using a leaf removal unit on the lower portion to remove leaves;~~

~~summer pruning the upper part of the ballerina with a mechanized pruner unit, trimming all shoots on the lower part of the ballerina before harvest with a mechanized pruner unit;~~

wherein the fruit removal is conducted after shoot thinning and before fruit is ready for harvest, by removing any excess fruit from the upper part of the ballerina with a mechanized

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fruit thinner, and any excess fruit on the lower part of the ballerina with a mechanized fruit thinner having different top and bottom settings; wherein the leaf removal machine and the mechanized pruner unit are coupled to a vehicle and configured for mechanical operation while the vehicle moves through the vineyard, and wherein the mechanized leaf removal and mechanized summer pruning are coordinated with the other mechanized operations to achieve a predetermined node density and yield; and

~~harvesting with a mechanical harvester.~~

67. (Withdrawn) A mechanization system for mechanizing a vineyard and which at least substantially maintains fruit quality, comprising:
- a dedicated mechanical pruning tool;
 - a dedicated mechanical shoot thinning tool; and
 - a dedicated mechanical harvesting tool.
68. (Withdrawn) A system according to claim 67, wherein the shoot thinning tool comprises a striking tool.
69. (Withdrawn) A system according to claim 68, wherein the striking tool comprises a brush.
70. (Withdrawn) A system according to claim 67, wherein the pruning tool comprises a cutting tool.
71. (Withdrawn) A system according to claim 70, wherein the cutting tool comprises a cutting bar.
72. (Withdrawn) A system according to claim 70, wherein the harvesting tool comprises a shaker tool.

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73. (Withdrawn) A system according to claim 70, wherein the shoot thinning tool comprises a striking tool, wherein the pruning tool comprises a cutting tool, and wherein the harvesting tool comprises a shaker tool.

74. (Withdrawn) A system according to claim 73, wherein the cutting tool comprises a cutting bar.

75. (Withdrawn) A system according to claim 73, wherein the striking tool comprises a plurality of striker elements.

76-82. Cancelled

83. (Currently Amended) A mechanized method for vineyard cultivation, comprising:

mechanical pruning during a first period in the vineyard's dormant season using a hand-held free first tool comprising a cutting tool as a mechanized pruner as a mechanized pruner to remove a predetermined percentage of grapevines canes and/or shoots;

shoot thinning to remove shoots below the grapevine's cordon and spaced apart from and above a base of the grapevine during a second different period in the vineyard's growing season using a hand-held free second tool comprising a striking tool as a mechanized shoot thinner to remove a predetermined percentage of shoots; and

fruit thinning during a third different period in the vineyard's growing season after shoot thinning after shoot thinning using a hand-held free mechanized fruit thinner to remove a predetermined percentage of fruit, wherein pruning, shoot thinning and fruit thinning are coordinated to achieve a predetermined node density and yield;

harvesting using a mechanized harvester comprising a shaking tool;

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wherein the first tool, second tool, mechanized fruit thinner and mechanized harvester are mounted to a vehicle and configured for mechanized pruning, mechanized shoot thinning, mechanized fruit thinning, and mechanized harvesting respectively while the vehicle moves through the vineyard.

84. Cancelled